ANNUAL WATER QUALITY REPORT

City of Morro Bay
WATER TESTING PERFORMED IN 2016
PWS ID# CA4010011

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Basic Information About Drinking

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the layers of the ground it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals and human activity.

Contaminants that may be present in source water include:

Microbial Contaminants: such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic Contaminants: such as salts and metals that can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and Herbicides: that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic Chemical Contaminants: including synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural applications, and septic systems.

Radioactive Contaminants: that can be naturally occurring or be the result of oil and gas production and mining activities.

Your 2016 Water Quality Report

Since 1990, California public utilities have been providing an annual Water Quality Report to their customers.

The City of Morro Bay is proud to present our annual water quality report. This report shows the results from all of our water quality testing completed from **January 1 through December 31, 2016**. Morro Bay's highly competent staff is constantly seeking the best approaches to delivering to you the highest quality water possible and is dedicated to producing drinking water that meets all State and Federal standards. We remain committed to meeting the State's water source protection, water conservation and community education goals, and serving the needs of all our water users.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board's (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at: 1-800-426-4791.

Community Participation

The Public Works Advisory Board (PWAB) meets the third Wednesday of the month at the Veterans Hall located at 209 Surf Street at 5:30 p.m. If you have concerns you wish to express about your drinking water, time is set aside at the beginning of each meeting.

To view a copy of this report or get more information regarding the City of Morro Bay Water Division visit www.morrobayca.gov/313/Water-Division

DEFINITIONS

Average Amount: The amount detected; or when a range of values is shown, the average detected.
Level 1 Assessment: A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.
Level 2 Assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli MCL* violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.
Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.
Maximum Residual
Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants
Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
Million Fibers per Liter (MFL): EPA has established a maximum contaminant level (MCL) for asbestos in drinking water: 7 MFL (million fibers per liter).
Nephelometric Turbidity Units (NTU): Measurement of the clarity, or turbidity, of water.
Parts per billion (ppb): One part substance per billion parts water (or micrograms per liter).
Parts per million (ppm): One part substance per million parts water (or milligrams per liter).
Parts per million (ppm): One part substance per million parts water (or milligrams per liter).
Picocuries per liter (pCi/L): A measure of radioactivity.
Primary Drinking Water Standards (PDWS): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.
Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
Regulatory Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
NA: Not applicable **ND:** Not detected
NS: No standard **NC:** Not collected

Where Does My Water Come From?

The City of Morro Bay's primary source of water is surface water from the State Water Project. The State Water Project is administered locally by the Central Coast Water Authority (www.ccwa.com). The water is treated at the Polonio Pass Water Treatment Plant, which is near the junction of Highways 41 and 46 and water is then pumped to Morro Bay. The State Water supply can be augmented by and blended with water pumped from wells located near Keiser Park (Morro Basin) and Chorro Creek Road (Chorro Basin). Some of the well water has nitrate contaminant levels that require treatment through either blending or filtration. In addition, wells in both the Morro and Chorro basins have had periodic episodes of bacteriological contamination. All well water has a disinfectant added prior to use. The City also has a desalination plant, which is utilized as a standby source. During 2016 State Water provided 96% of the City's drinking water and the wells provided the remaining 4%, with all of this well water being treated by the Brackish Water Reverse Osmosis plant.

Drinking water source assessments (DWSAP) assess the area around a drinking water source through which contaminants might move and reach that drinking water supply. They include an inventory of possible contaminating activities (PCAs) that might lead to the release of microbiological or chemical contaminants within the delineated area, and a determination of the PCAs to which the drinking water source is most vulnerable. DWSAP for the Morro and Chorro wells were completed during the 2001 fiscal year, an assessment was completed in 2009 for additional wells in the Morro basin that are being used as irrigation and feed water for the desalination plant. The results of these assessments are available to the public by contacting the Public Works Department or by visiting the State Water Resources Control Board's (State Board) website at:

(http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/DWSAP.shtml).

Overall, the wells had a risk assessment of low to medium. The Morro Basin wells are considered most vulnerable to the following activities not associated with any detected contaminants: gas stations, known contaminant plumes, and agricultural drainage. The Chorro Basin wells are considered most vulnerable to the following activities not associated with any detected contaminants: agricultural drainage, septic systems, wells (agricultural, irrigation), and other animal operations. Both groundwater basins have been impacted by nitrate contamination and periodic episodes of bacteriological contaminates. The City has made significant investments in providing treatment for the Morro groundwater basin.

Sampling Results

Over the past years we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. We are happy to report that for **2016** we were not in violation at any time. While the range of contamination in the raw well water may have exceeded the drinking water standards, all of the water delivered to your home had contaminant levels reduced through either blending or treatment. The table below lists all of the drinking water contaminants that were detected during the most recent sampling for the constituent. If a contaminant was tested for and not found in the system or source water, it is not included in this report. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old.

PRIMARY DRINKING WATER STANDARD (Regulated In Order To Protect Against Possible Adverse Health Effects)

SUBSTANCE (UNITS)	*YEAR SAMPLED	MCL	PHG (MCLG)	State Water AVERAGE AMOUNT	State Water RANGE LOW-HIGH	Well Water[4] AVERAGE AMOUNT	Well Water[4] RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Aluminum (ppm)	2016	1	0.6	0.06	ND - 0.082	0.0017	ND - .01	No	Erosion of natural deposits; residue from water treatment processes
Arsenic (ppb)	2016	10	0.004	ND	ND	2	ND-5	No	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes
Barium (ppm)	2016	1	2	ND	ND	0.147	.077 - 3.24	No	Discharge of oil drilling wastes and from metal refineries; erosion of natural deposits
Fluoride (ppm)	2016	2	1	ND	ND	0.2	0 - 0.3	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nickel (ppb)	2016	100	12	ND	ND	4.2	2 - 8	No	Erosion of natural deposits; discharge from metal factories
Nitrate (as Nitrogen) (ppm)	2016	10 (as N)	10 (as N)	0.41	0.41	8.6	.8 - 35.7	No[4]	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Selenium (ppb)	2016	50	30	ND	ND	10.1	4 - 19	No	Discharge from petroleum, glass, and metal refineries; erosion of natural deposits; discharge from mines and chemical manufacturers; runoff from livestock lots (feed additive)

*** sampling year for well water was in 2015; well water is sampled every three years; sampling will occur again in 2018**

PRIMARY DRINKING WATER STANDARD (Regulated In Order To Protect Against Possible Adverse Health Effects)

SUBSTANCE (UNITS)	*YEAR SAMPLED*	*MCL*	*PHG (MCLG)*	*STATE DLR*	*RANGE AVERAGE*	*STATE WATER*
RADIONUCLIDES						
Gross Beta Particle (pCi/L)	2016	50	0	4	Range Average	5.7 5.7
CLARITY (NTU)						
Combined Filter Effluent Turbidity	2016	TT=<1 NTU every 4 hours TT=95% of samples <0.3 NTU			Range %	0.03-0.11 100%

SECONDARY DRINKING WATER STANDARD (Regulated In Order To Protect The Odor, Taste And Appearance Of Drinking Water)

SUBSTANCE (UNITS)	*YEAR SAMPLED	State MCL	State Water AVERAGE AMOUNT	State Water RANGE LOW-HIGH	Well Water[4] AVERAGE AMOUNT	Well Water[4] RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chloride (ppm)	2016	500	97	41-138	290.9	94 - 1480	No	Runoff/leaching from natural deposits; seawater influence
Iron (ppb)	2016	300	ND	ND	190.8	ND - 2040[4]	No	Runoff/leaching from natural deposits; industrial wastes
Specific Conductance (umhos/cm)	2016	1600	609	374-757	1705	1040 - 5050	No	Substances that form ions when in water; seawater influence
Sulfate (ppm)	2016	500	100	100	96.6	66 - 149	No	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (ppm) (TDS)	2016	1000	346	194-442	989.2	620 - 2870	No	Runoff/leaching from natural deposits
Turbidity[3] (NTU)	2016	5	0.06	0.03-0.13	1.3	ND - 11.7	No	Soil runoff

* sampling year for well water was in 2015; well water is sampled every three years; sampling will occur again in 2018

Water Distribution System

SUBSTANCE (UNITS)	YEAR SAMPLED	MCL [MRDL]	PHG (MCLG) [MRDLG]	State Water AVERAGE AMOUNT	State Water RANGE LOW-HIGH	Morro Bay AVERAGE AMOUNT	Morro Bay RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Haloacetic Acids (ppb)	2016	60	NA	8.1	4.1-14	16.3	2-37	No	By-product of drinking water disinfection
TTHMs (ppb) (Total Trihalomethanes)	2016	80	NA	48	31-60	46.6	31-62	No	By-product of drinking water disinfection
Total Chlorine Residual	2016	4	4	2.3	1.9-2.7	1.3	0.26-2.2	No	Measurement of the disinfectant used in the production of drinking water
Total Coliform Bacteria (# of positive samples)	2016	0	0	0	0	0	0	No	Naturally present in the environment

Tap water samples were collected for Lead and Copper analyses from 30 homes throughout the distribution system

SUBSTANCE (UNITS)	YEAR SAMPLED	ACTION LEVEL	PHG (MCLG)	AMOUNT DETECTED (90th%Tile)	HOMES ABOVE ACTION LEVEL	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2015	1.3	0.3	0.12	0	No	Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb) [2]	2015	15	0.2	6.7	0	No	Internal corrosion of household water plumbing systems; discharges from industrial manufacturer; erosion of natural deposits

DISTRIBUTION SYSTEM MICROBIOLOGICAL CONTAMINANTS

CONTAMINANT	YEAR SAMPLED	MCL	HIGHEST NO. OF DETECTIONS IN ONE MONTH	No. of months in violation	Major Sources in drinking water
Total Coliform Bacteria (# of positive samples)	**2016**	**0**	**0**	**0**	Naturally present in the environment
Fecal Coliform or E.coli (# of positive samples)	**2016**	**0**	**0**	**0**	Human or animal fecal waste

Lead in Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at: 1-800-426-4791 or www.epa.gov/safewater/lead.

The City of Morro Bay is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking.

UNREGULATED AND OTHER SUBSTANCES (Used To Monitor Certain Contaminant Occurrences)

SUBSTANCE (UNITS)	YEAR SAMPLED	State Water AVERAGE AMOUNT	State Water RANGE LOW-HIGH	Well Water[4] AVERAGE AMOUNT	Well Water[4] RANGE LOW -HIGH	TYPICAL SOURCE
Aggressive Index (Corrosivity)	2015	ND	ND	12.1	12 - 12.5	Balance of hydrogen, carbon & oxygen in water, affected by temperature & other factors
Alkalinity (ppm)	2015	66	42-84	365	310 - 500	Runoff/leaching from natural deposits; seawater influence
Boron (ppm)	2015	ND	ND	0.1	ND - 0.2	Runoff/leaching from natural deposits
Calcium (ppm)	2015	53	30-82	96.4	34 - 278	Runoff/leaching from natural deposits; seawater influence
Hardness (ppm)	2015	115	64-162	669.8	369 - 1800	Runoff/leaching from natural deposits
Heterotrophic Plate Count (HPC) (cfu/ml)	2015	0.4	0-2	3.041	ND - 11[1]	HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water
Magnesium (ppm)	2015	17	17	104.3	68 - 269	Runoff/leaching from natural deposits; seawater influence
Manganese (ppb)	2015	ND	ND	2.5	ND- 30	Runoff/leaching from natural deposits
pH (units)	2015	8.3	8.0-8.5	7.3	6.9 - 7.6	Runoff/leaching from natural deposits
Potassium (ppm)	2015	4	4	0.9	ND - 4	Runoff/leaching from natural deposits; seawater influence
Sodium (ppm)	2015	87	87	87.9	45 - 317	Runoff/leaching from natural deposits; seawater influence
Total Organic Carbon (ppm)	2015	2.3	1.5-3.5	NA	NA	Various natural and man made sources
Vanadium (ppb)	2015	ND	ND	6.2	2-15	Vanadium is a naturally occurring "rare earth" element that is found ubiquitously in the earth's crust.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. U.S. EPA/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at: 1-800-426-4791.

Questions?

For more information about this report, or any questions relating to your drinking water, please contact Damaris Hanson, at (805) 772-6265 or dhanson@morrobayca.gov

Footnotes:

[1] HPC results are reported from the distribution system not from the raw well water.

[2] Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and/or flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the U.S. EPA Safe Drinking Water Hotline at 1-800-426-4791.

[3] Turbidity (NTU) is a measure of the cloudiness of the water and it is a good indicator of the effectiveness of a treatment plant's filtration system.

[4] Sampling from well water is for raw water results. Samples are taken prior to either treatment or blending.

[5] Sampling year for well water is 2015; well water is sampled every three years, with 2012 the most recent year. Sampling will be conducted again in 2018.